Low-Cost Urban Housing Markets: Serving the Needs of Low-Wage, Rural-Urban Migrants?

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Abstract

Integrating China's 200 million rural-to-urban migrants into urban society is a critical challenge that, if unsuccessful, could undermine the entire urbanization project. To this end, understanding and responding to migrants' housing needs, goals, and difficulties is an important aspect of 'successful' urbanization. Doing so is difficult, however, because of the complex legacy of housing reform and the transitional state of the housing market, and because so little is known about migrants' housing preferences and behavior.

This paper fills some of the gaps regarding migrant housing choice, demand, and quality using data from a purpose-designed survey of 800 low-status migrants in Tianjin. Results show that in many cases these individuals do not to exercise housing 'choice' as much as they undergo housing 'sorting' that follows from occupational choices. That is, less than half of our respondents got their housing through the private rental market and only a slightly higher share pay any rent. Employment variables (industry sector, employer type) are consistently and strongly significant across our housing choice models and significantly affect housing quality as well. Nonetheless, a low-cost rental sector does exist, serving about two-fifths of migrants in our sample. Within this subset, housing demand is more consistent with theory in the sense that income and life cycle factors are important and the role of employment characteristics is diminished.

In all models individual migration characteristics, such as duration of residence, future migration plans, and sending remittances home, are significant, though which particular characteristics matter varies. We take this as an indication that migration status affects housing outcomes in multiple and subtle ways. This perspective differs, somewhat from the literature on housing choice in urban China, which emphasizes the role of institutional factors in determining cross-group housing outcomes. Although our results do not directly contradict these claims, our findings of (1) substantial variation in the determinants of housing choice/demand *within* the migrant pool, combined with (2) the 'sorting' of migrants into housing based on employment choices, suggests that at least some of the differential in housing outcomes between migrants and other urban groups is a result of individual migration characteristics and employment choices rather than institutional factors in the housing market.

Ultimately, we read the empirical results of our study as indicating that the primary policy prescription of the urban China housing choice literature – to eliminate residual barriers that prevent migrants from accessing low-cost public-sector rentals is insufficient and may not respond to the concerns of migrants themselves. Of course, removing such barriers would not be an unwelcome step but, for instance, it is unlikely to have any impact on the housing situations of the half of all migrants that obtain housing through their employer. In short, a range of policies will be necessary to support the housing goals of migrants who have different housing needs and face different constraints in meeting them.

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Introduction

Among low-income groups in Chinese cities, the most disadvantaged are migrants from rural areas, who occupy the bottom of the wage/occupational structure. There are currently 200 million of these individuals and their numbers are expected to reach nearly 450 million by 2030. Due both to their sheer numbers and their low socio-economic status, successfully integrating rural-to-urban migrants into the fabric of urban society is a key challenge to the success of China's urbanization process. Understanding and responding to migrants' needs, goals, and problems with respect to housing is an essential element of any effective response to this challenge.

Unfortunately, however, there is little directly useful information available to policymakers tasked with addressing migrant housing issues. This has resulted, among other things, in spectacular policy failures such as the construction of housing for migrants in some cities that remains unoccupied despite nominal rents (Xiao 2006).[1] The international literature on housing choice in urban China spends very little time investigating the ways that migrants search for housing or make decisions from among the choices available to them.[2] The lack of policy-relevant, China-specific information is especially critical because the suite of housing options available to migrants is a non-standard mix of low-cost rentals, free accommodation on worksites, dormitory style group quarters, and self-built structures, about which the broader housing choice literature has little to say.

This paper reports on research designed to provide policy-relevant information on migrant housing choice in urban China. The study moves beyond the literature's focus on evaluating the causes of cross-group differences in housing choice. Instead, it examines the drivers of differences *within* the migrant pool and works to develop an understanding of migrants' decision-making process with respect to housing. Empirical evidence is based on a survey of 800 migrants in Tianjin in January and February of 2007 – none of whom own urban homes or hold Tianjin urban *hukou*. The paper presents a series of models dealing with three housing issues – choice, demand, and quality - among Tianjin's migrant population. Key findings are as follows:

With respect to housing choice, we examine two issues: whether a respondent obtains housing through an employer or through the low cost rental market; and whether a respondent pays rent or obtains housing for free. In both models, relative to the life-cycle and income factors that typically explain housing outcomes, industry sector (construction, manufacturing, services, street business) and employer type (SOE/COE, private, FIE/JV, self) are much stronger factors.[3] Migration characteristics are also significant in both models but different factors are involved in each case. In the provider model, having

[1] Only 5.8 percent of our respondents had heard of migrant housing developed by government.

[2] Instead, it concentrates on identifying differences in housing quality/outcomes *across* urban population groups, and on establishing linkages between such differences and vestiges of the central planning system. These studies, which make connections between housing inequality and migrants' institutional status, are intended as support for what Huang and Jiang (2007) call the '*hukou* inequality hypothesis.'

[3] Industry sector is one of four classes: construction, manufacturing, services, street business. Employer type is either SOE/COE, private, FIE/JV, or self-employed.

been a migrant for longer lowers the probability of finding housing in the market but each year in Tianjin raises it by a slightly larger amount. Planning to stay in the city permanently is not significant. In the rent/free housing model, years in Tianjin is significant, as is whether the respondent plans to stay in the city long term, but years as a migrant is not.

Based on the weakness of life-cycle variables, the insignificance of income, and the dominance of employment concerns we conclude that the overall housing sector in which migrants participate is incompletely marketized. (In fact, nearly one-third of our respondents have never paid rent for housing.) We then run a housing demand equation for the amount of rent paid monthly over the subset of our respondents that obtain their housing in the market (defined as paying rent to a private landlord). In this model the results are more consistent with the literature and thus with marketization in the low-cost migrant housing sector. Income and age both boost monthly rent paid, and employment variables lose some of their importance. Also, additional migration characteristics that were not significant in the earlier models have an impact on housing demand and have the expected effects - sending remittances home lowers rent paid and owning land in the village raises it. Planning to stay in Tianjin long term also raises housing demand. From these results, we conclude that there is market component to the suite of housing options available to migrants but it is for a subset of migrants and migrant housing choices only. Among this group, migration characteristics do impact decisions about the amount of housing to consume.

With respect to housing quality, we find that overall quality is modest, with most residents suffering one or more quality problems. An ordered logit model of our quality index shows that income, life-cycle, employment, and migration factors are all significant influences on housing quality, as are housing provider and cost. Interestingly, the role of industry sector is conditioned by whether or not housing is provided freely or not (the likelihood of which varies by industry). In fact, in a model with interaction terms for housing cost and industry sector, industry sector itself falls out completely. In our final model, quality varies with migration characteristics in ways that can be intuitive (*e.g.*, lower quality among those that send remittances home) and that reflect the experience of being a migrant (*e.g.,* owning farmland) but that have not been widely studied as determinants of housing outcomes.

Taken together, the results of the study suggest that migrants' housing outcomes are due irreducibly, at least in part, to their status as migrants. That is, they make certain housing choices because they are mobile individuals with kinship ties/obligations elsewhere, who are highly focused on earning a living, who may own or control rural/agricultural property, and who learn more about city life and urban housing markets over time. It seems likely that this suite of individual characteristics is sufficiently important as to differentiate migrants from other low-wage, low-skill urbanites with respect to housing needs and choices.

The association we find between employment/migration characteristics and housing outcomes *within* the migrant group is strong enough to lead us to question the extent to

which earlier cross-group studies of housing choice and/or housing conditions may to some extent have conflated 'being a migrant' and '*hukou* status' as drivers of housing outcomes in today's Chinese cities. As a result, these studies may have over-emphasized the importance of institutions on housing outcomes at the expense of individual characteristics. Our data do not allow us to test this hypothesis because we have no non-migrant control group. Doing so is, however, an obvious next step for research that seeks to explain, either in theory, or for the benefit of policymaking, migrant housing behavior and outcomes.

Perhaps the most basic insight that can be derived from our work is the fact that very little is known about the determinants of housing choices and the determinants of housing demand among migrants, and that much more must be learned before policies to improve their housing situations can be effectively crafted. It is nonetheless clear that the goal of such policies should be (1) to enable migrants that wish to remain permanently in urban areas to access housing on equal footing with local residents and (2) to not encroach on labor mobility and/or migrants' desire to pursue dual-location lifestyles.

The remainder of the paper is organized as follows. The next section presents information on migration and housing trends and policies during the Reform Period. This is followed by a review of the literature on housing choice and migrant housing in Chinese cities. We then describe the study site and research design before presenting descriptive statistics on our survey respondents and the housing they occupy. This is followed by the principal empirical results before a final section summarizes key findings and concludes the paper.

Migration and Housing: Trends and Policies

By way of contextualizing the remainder of the paper, this section provides an overview of migration and housing issues during the Reform Period. The section identifies policy changes that have significantly affected housing and migration trends over time. Ultimately, developments in housing and migration are both cause and effect of China's urbanization and broader economic transition and should be understood in terms of these processes.

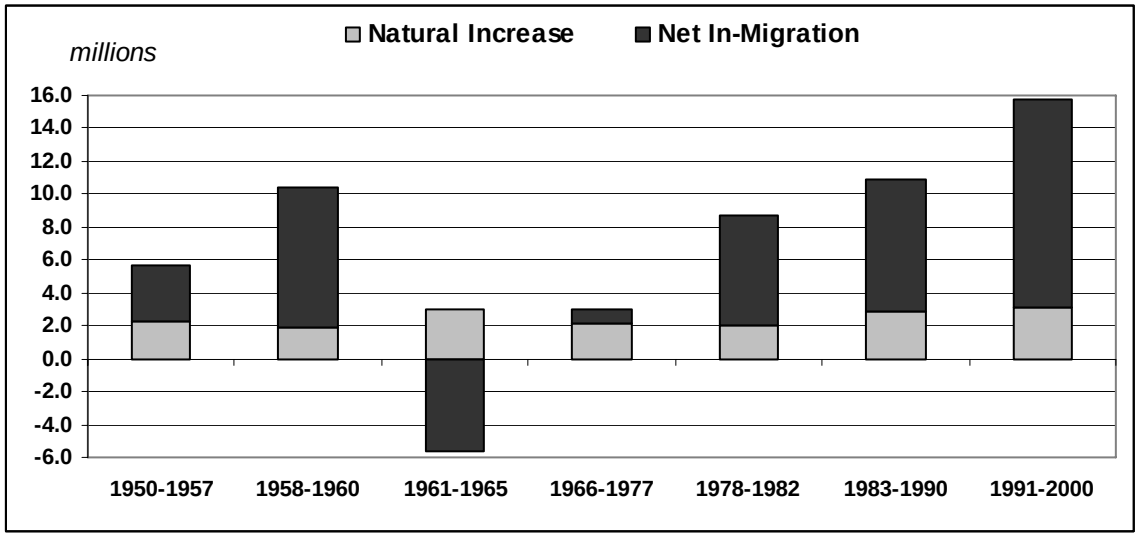
Domestic migration in China

China's rural-to-urban population flows constitute the largest migration in human history. It is estimated that there currently 200 million such migrants living and working in cities Xinhua Net (2006). Figure 1 shows that migration levels have been steadily increasing since the 1970s, with recent levels the highest during the New China Period. Of the 15.7 million average annual increase during the 1990s, 20 percent (3.2 million) is due to natural increase of the existing urban population and 80 percent (12.5 million) from in-migration (Chan and Hu 2003).[4] Data from the National Bureau of Statistics show that

[4] Chan and Hu (2003) point out that some of what is classified as 'migration' actually results from reclassification of areas from rural-to-urban. They estimate that 72.5 percent of urban population growth attributed to 'migration' genuinely results from migration, with the remainder a result of the reclassification

the pace of urban population growth has actually accelerated since the 1990s, to 21.1 million annually (between 2000 and 2004).

Figure 1: Components of Average Annual Urban Population Growth, 1950-2000



Note: Net annual change in population 1961-1965 is -2.6 million.
Source: Chan and Hu (2003).

Migration has been driving China's urbanization rate ever higher during the Reform Period - from 19.6 percent in 1980, it now stands at 43.0 percent. The UN Population Division's most recent projections (Figure 2) indicate that China will add an additional 341.8 million urban residents between 2005 and 2030, for a total of 875.2 million, in a total population of 1,446.5 million.[5] Over this period, total population will increase by only 130.6 million, meaning that the urbanization rate will rise dramatically. It will, in fact, surpass 60 percent by 2030, as indicated by the line on Figure 2. The cumulative effects of urbanization in the first fifty years of the Reform Period will be: (1) total population growth of 447.6 million (44.8 percent), urban population growth of 678.9 million (346.0 percent), and a tripling of the urbanization rate from 19.6 to 60.5 percent.[6]

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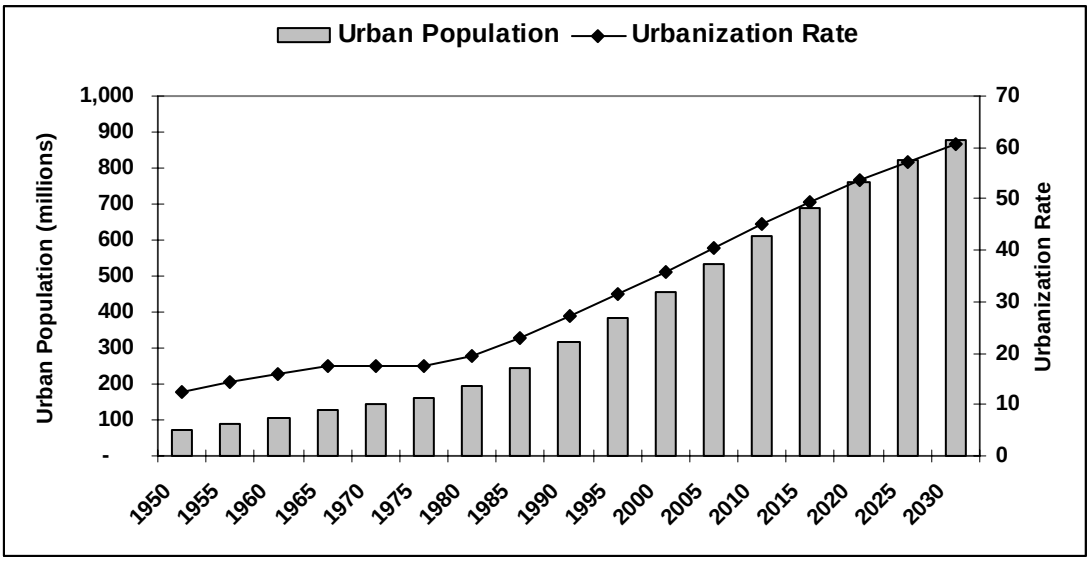
of administrative units from rural-to-urban. This makes the actual shares of urban growth attributable to natural increase, rural-to-urban migration, and reclassification, 22, 58, and 20 percent respectively. Chan and Hu (2003) also note that 58 percent show be a considered a lower bound on migration's share, because some portion of reclassification also reflects migration as areas re-classified to urban tend to be places where industrial activity has drawn migrants.

[5] This implies an annual average increase in urban population of 13.7 million from 2005 to 2030. The UN calculated annual average growth between 1990 and 2000 at 11.9 million, well below the 15.7 million rate in Chan and Hu (2003). The UN figures should not therefore be interpreted as indicating that the pace of urbanization will slow in the coming decades.

[6] In the coming decades, in-migration will almost certainly contribute the majority of urban population growth because low urban fertility rates limit the contribution that natural increase can make to urban population growth. The fertility rate for China as a whole is estimated at 1.85, an aggregate of a 1.46 rate in cities, 1.53 in towns, and 2.00 rate in rural areas. Data are from the State Statistical Bureau from 1995 but

Figure 2: China's Urbanization, 1950-2030



Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, World Population Prospects: The 2004 Revision and World Urbanization Prospects (http://esa.un.org/unpp).

Since 1949, the policy environment has been an important enabler/constraint on domestic migration. This began in the 1950s as part of the government's industrialization policy, which was built on extracting a surplus from the countryside by keeping agricultural prices low. The effect of this policy on rural incomes made it necessary to develop a system of residence restrictions to keep the poorly paid rural labor force in place. Three policies made possible this coexistence of low agricultural prices and fixed rural labor: rules on the Unified Procurement and Unified Sale of Agricultural Commodities (*tongguo tongxiao*), the establishment of People's Communes (*renmin gongshe*), and the Household Registration System (*hukou*). Fang (no date) argues (1) that the institutional - as opposed to market based - allocation of factors of production caused a massive over-allocation of capital in urban areas and of labor in rural areas and (2) that the result of any weakening of these institutions that collectively held the system in place should would, among other things, almost certainly include a massive reallocation of labor from rural to urban areas.

This was indeed the case as this set of interlinked constraints began to unravel at the outset of the Reform Period. The first step was the introduction of the household responsibility system, which freed up rural labor for non-agricultural use. Excess labor was, for the most part, initially deployed in various non-farming rural activities, and in township and village enterprises (TVEs), in a policy framework based on of 'leaving the land but not the village' (*litu bu lixiang*) (Wong and Huen 1998). At the same time,

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are presented on IIASA's *Can China Feed Itself?* website (Heilig 1999) http://www.iiasa.ac.at/Research/SRD/ChinaFood/index_m.htm.

however, changes in the urban economy were creating demand for workers to fill physically demanding, low-skill jobs (Zhang 2007). Due to a combination of access to better-compensated employment opportunities, better access to social welfare benefits, and a distain for dirty and dangerous work, it was difficult to find urban dwellers to perform these jobs. City officials were thus obliged to look the other way as rural migrants, who were not technically allowed to either live or work in urban areas, began arriving to fill them.

The resulting rural-to-urban migration flows expanded through the first half of the 1980s and, in 1985, a temporary residence certificate (TRC) was introduced requiring those with rural *hukou* to register their urban residence and allowing them residence in urban areas for one year, and renew at the end of that year. In theory, employers were allowed only to hire migrants with official temporary residence status but the law was difficult to enforce. The TRC was also used to devise quotas and/or restrictions on migrants in some jobs and employment categories in order to maintain preferences for urban resident status (Zhang 2007). Many migrants, however, ignored the TRC for a combination of reasons but mostly because they changed jobs and residences regularly, and moved back and forth between the city and countryside.

In any event, rural-to-urban migration intensified during the 1990s, driven by increased demand for urban workers, a growing disparity in rural and urban incomes, and the decline of TVEs as sources of non-urban employment. By this point, 'chain migration' linkages were well established, as migrants from the same village or county concentrated in specific occupations and/or parts of cities (Ma and Xiang 1998). Because of their often informal residential status, migrants were subject to arrest and some were periodically forced out of the city during the 1990s. Informal settlements were sometimes targeted for demolition by local authorities in response to urban planning goals, perceived crime problems, or other motives. Most demolished 'villages in the city' re-emerged elsewhere, however, their existence necessitated by the fundamental growth imperative of the Chinese economy during this period. In any case, by the end of the 1990s, the state granted migrants the right to work in cities.

Today, the direct institutional impediments to urban residence and employment of rural migrants have largely ended. Three more subtle factors limited their ability to become full-fledged urban citizens, however. First, in most cases migrants do not have access to (or must pay substantially more for access to) welfare and social protection benefits available to native-born residents. Second, a variety of factors that are a legacy of the economic and social transition – such as the privatization of housing at below market rates and subsequent dramatic increase in home prices – provide advantages to some non-migrants that persist even in the current social/economic environment. Third, native urban residents tend to look down on migrants, perceiving them as uncouth and unclean, and in many cases viewing the migrant labor pool as a reservoir of criminal activity. Together, these three factors serve to marginalize migrants in the transitional urban socio-economic hierarchy.

China's urban housing system

As is widely known, housing in urban China was a welfare good well into the Reform Period. Despite some experimentation at the local government level and limited commodity housing development, most of the 1980s saw little fundamental change in this system. The only exception, which had significant longer-run implications, was the re-establishment of markets for urban land and real estate in 1988, with the Land Management Act of China. Under the Act, although all urban land remained state-owned, the government began offering long-term leases on land parcels for new construction.[7] A market for new homes thus emerged on land parcels leased from the state to the real estate developers who built residential buildings and sold the units on market.

Change began in earnest in the 1990s. This was driven by several factors: the government's realization that the maintenance costs were much higher than the rents being charged (Zhang 2000); the desire to sever the link between housing and employment to spur labor mobility; and the goal of using the housing sector to boost overall economic growth. By the mid-1990s, there was a concerted effort to privatize public rental units at below market rates. This was matched, at least for a while, with progressive rent increases, though in many cases these were abandoned in the face of tenant protests.

At the same time, the central government unveiled what remain its two primary housing policies, the housing provident fund (Z*hufang Gongjijin*) – a housing savings scheme with employer contributions - and 'economic and comfortable housing' (*Jingji Shiyong Fang*), also known simply as 'affordable housing,' a subsidy program intended to benefit lower-middle income would-be owners. In practice both had limited effect (Duda, Zhang, and Dong 2005) and they have been criticized as mis-targeted (Sun 2004), regressive (Lee 2000, Tomba 2004), and generally ineffective (Du and Trefezger 2003, Wang 2001, Zhan 2003). Fundamental policy change finally occurred in 1998 when the government banned in-kind workplace housing benefits, ending the era of work unit based welfare housing and for the first time definitively setting course toward market-based housing provision.

Assessing housing reforms of the 1990s, Lee (2000) argues that the government's intervention strongly favored owner occupancy over rental tenure. His claim is difficult to dispute. The central government's three most visible policies amounted to: the transfer of rental units to owner-occupiers at below-market rates; a subsidy for middle-class homebuyers; and the establishment of a housing downpayment savings program bundled with a preferential mortgage interest rate. Meanwhile, the private mortgage market was also re-introduced. Collectively, these programs not only favored homeownership but, for the most part, benefited relatively well-off households (though many households with modest means did manage to participate in the privatization process). Many low-income renters were able to continue occupying their units at favorable rates but typically endured a host of quality problems.

[7] The lease terms are: 70 years for residential use, 40 years for commercial use, 50 years for industrial or institutional use, and 50 years for mixed use.

From the perspective of rural-to-urban migrants, housing reform meant little. They were ineligible for the subsidy schemes, they did not occupy housing that they could purchase at discounted rates, they did not have the kind of employment that carried access to the housing provident fund benefits, most had little use for mortgages, and they were administratively excluded from public sector rentals. Housing reform did however, free up some of the stock for renting by rural migrants and made it more difficult to enforce residence policies more generally. As more migrant workers came to cities, more sources of supply opened up.

As noted above, many migrants congregated in informal settlements. In 2005, there were about 100 'urban villages' in Tianjin, 231 in Beijing, and 139 in Guangzhou (Yu 2005). These were typically regarded with suspicion by both city officials and urban residents (Zhou, Chen, Li, Yang and Liang, 2005). Urban villages that appear dirty and disorganized became targets for 'regeneration' by officials who view them as a barrier to the 'improvement' of the city. In 2005, the perception of urban villages as problem sites within the city reached a peak. One response, by the Ministry of Construction, was to identify improving housing for migrants as a key policy priority. Researching ways to solve migrant housing problems was, for the first time, listed as one of the Ministry's key goals.

The primary response was the building by some local governments of new, very low cost housing (dormitories or cheap rental units) for migrants. Uptake has generally been slow, however (Xiao 2006), with media reports showing that migrants are reluctant to leave their urban villages. Explanations for this unwillingness on the part of migrant to occupy housing that is often cheaper and of higher standard than their current unit range from strong cultural affinities, the inability to receive compensation for investment in housing in the urban villages, spatial mismatch with employment, and fears of disrupting social networks. In any case, government rarely invited the collaboration of migrants themselves and the perhaps unsurprising result is that the housing seems not to be very well tailored to migrants' needs. Further regeneration of the villages now appears to be on hold Yu (2005).

Earlier in 2007, the state made one additional, modest effort to address migrants' potential housing market inequality by extending the housing provident fund to them. As noted above, however, the policy does little to help those with lower incomes - even if they are native urbanites - because house prices are so high relative to their incomes as to make commodity housing unaffordable even with the subsidy carried by the program. Further, the policy change applies only to migrants working as full time formal employees, a small subset of the total migrant population.

Literature Review

There is little precedent for the current project in the mainstream literature on housing choice, which for the most part, uses data from mature housing markets and deals primarily with intra-metropolitan choices and mobility triggers. This literature also focuses largely on tenure choice, as opposed to the types of choices faced by low-wage, low-status migrants. This literature therefore only informs the study at the broadest level in that it suggests that housing choices ought to be related to life cycle and economic factors. Also relevant to China is the findings by a subset of this literature that housing choice is also often conditioned by government and/or institutional factors (Van der Vlist *et al.*, colleagues, 2002; Dieleman and Everaers, 1994).

With respect specifically to migrants, the mainstream housing choice literature shows that housing tenure and mobility rates are influenced by an additional set of factors. These include cultural background, language skills, time since emigration, and local housing market characteristics, and serve to differentiate housing outcomes among migrants and natives (see, for example, Painter and colleagues 2004, Gabriel and Painter 2003, Deng *et al*. 2003, Myers and Lee 1998, Alba and Logan 1992, Boehm, Herzog, and Schlottman 1991). Although the context is different - tenure choice studies in mature housing markets – these studies do suggest several factors that may be relevant to housing choices in urban China.

A handful of other studies have looked at migrants' housing choices in cities that, like China's, are actively urbanizing. Gilbert and Ward (1982) study 13 low-income migrants settlements in three Latin American cities finding that residential patterns result from constraints imposed upon land and housing markets rather than reflecting migrant choices. In Bucaramanga, Colombia, Edwards (1983) finds that the changing structure of the housing market, rather than lifestyle triggers, lead to residential moves among low-income households, including migrants. Arimah (1997) studies tenure choice in Ibadan, Nigeria finding that, in addition to standard economic and life-cycle characteristics such as income and number of children, that length of stay in the city and access to land via ethnicity influence housing choice. Finally, da Piedade Morais and de Oliveira Cruz (2007) look at tenure choice in Brazil, finding that when other factors are controlled, being a recent migrant reduces the likelihood of owner tenure.

Housing choice in China

There are a number of reasons to expect that housing choice in China may differ from the process described in both the developing and developed country literature (*e.g.*, the extremely rapid pace of economic development, the size of the migrant population, and the relatively recent transition from welfare housing provision to market based housing provision in urban areas). The urban China housing literature investigates this possibility primarily by introducing variables that capture the effect of institutional factors into standard housing choice and/or tenure choice models. As group, these studies show that institutional factors, such as party membership, work unit rank, and *hukou* status, are indeed important determinants of housing choice during the periods covered by the

studies. In some cases, they also show that standard influences on housing demand do not always play the same or as strong of a role as elsewhere, and, again, attribute this difference to the intervention of institutional factors.

Findings from Huang and Clark's (2002) tenure choice study are typical. In a national sample of households drawn from the 1996 national survey of housing they find that the effects of some variables (age, household size, income and house prices) have the expected impacts on the likelihood of owning but that others (marital status and number of workers in the household[8]) do not. They also find that institutional variables influence households' tenure choices, in the following manner: workers in higher-ranking work units are less likely to own; job seniority makes households more likely to own; and having temporary *hukou* lowers the propensity to own.

Other studies yield similar findings. Using data from 1996 gathered in Beijing and Guangzhou, Li (2003) finds that party membership is associated with increased likelihood of occupying subsidized housing in both cities. He also finds evidence that institutional factors influence locational choice - CCP members are more likely to purchase homes in suburban areas (as opposed to the central city) in Guangzhou. Using Cox proportional hazard models for the transition to homeownership over the first twenty years of the reform period, Li and Li (2006) find that working in a party, government, or SOE work units increases the log of the hazard of transitioning into ownership by almost 50 percent in Beijing. In Guangzhou, Li and Yi (2007) find that party membership strongly and positively influences the propensity to own housing. Looking at changes in housing outcomes across occupational classes, Yu (2006) finds that between 1995 and 2000, being an 'official' was associated with more rapid increases in per capita living space and more rapidly increasing homeownership rate.[9] Yu (2006: 277) concludes that "housing reform [increased] distributional inequality" and that in the transitional housing market "demographic and institutional factors instead of economic factors are more relevant in housing provision and residential behavior." Huang and Jiang (2007) use data from the 1995 population survey and 200 Census to argue that housing reforms in the 1990s increased housing inequality.

The mobility literature on urban China draws similar conclusions on the importance of non-market factors in housing choice and outcomes. F.Wu (2004) divides moves into voluntary and involuntary and shows that larger family size is associated with increased housing consumption only for voluntary moves, which he attributes to the impact of work unit rules linking housing allocation to family size. He (2004:7) argues that residential relocation in China is a function not of life-cycle based adjustment of housing demand but of "the household's position within the spectrum of state distribution to market reward." Both Wu (2004) and Li (2004) find the institutional structure is important determinant of mobility, with state sector employees less likely to relocate than others.

[8] Whereas these two factors increase likelihood of owning in the Western literature in the authors' sample China they lower it. Huang and Clark (2002) argue that this is because having more workers makes it more probable that the household will gain access to work unit subsidized housing and because being married triggers allocation of work unit rental housing.

[9] The other occupational categories are 'professional,' 'staff member,' and 'worker.'

Huang and Deng (2006) claim that mobility over the 1949 to 1994 period was primarily driven by housing policy rather than market factors, with changes in housing supply and a given household's qualification status as proximate causes. Fang (2006) studies a group of resettled residents, showing that the desire to adjust housing consumption has little impact on housing behavior among the group. This differs from literature developed the West where the desire to adjust consumption and actual moving behavior are closely linked. In summary, as a group, studies conducted in urban China conclude that even in current housing markets the legacy of the central planning system conditions housing choices, behavior, and outcomes in various ways.

Rural-urban migrant housing choice in China

Few studies set out to explain migrant housing outcomes. As a result, a review of research on this subject is mostly an exercise in isolating the element of other studies that bears on the issues migrant housing choice and behavior. This literature looks for evidence of differential housing outcomes across urban groups and it seeks explanations for such outcomes. Because so little was known about housing in Chinese cities, many studies were essentially descriptive, exploring the causes of urban housing outcomes, which, in many cases were revealed to be linked to *hukou* status. As with the literature in the previous section, institutional factors - especially *hukou* status - are generally identified as critically important sources of differential outcomes.

Among studies looking for evidence of differential housing outcomes across groups, Wu (2004), models tenure choice over a sample that includes migrants (both with and without local *hukou*) and urban natives in Beijing and Shanghai. She finds that that having local *hukou* (*i.e.*, being a *non*-migrant) substantially increases the odds of being a homeowner. Huang and Clark's research discussed above (2002) supports this result – when other relevant factors are controlled, households without permanent residency are 78 percent less likely to own homes than those with local residency in their national sample. Similarly, Li's (2000) study in Guangzhou also finds that institutional factors severely limit urban homeownership opportunities for rural migrants. Wu (2006) also shows that having a rural *hukou* increases mobility rates and that migrants who have been able to find housing in public sector rentals have lower mobility rates. Wu (2002) finds that renting from private individuals who own (or control use rights to) housing is the dominant housing option for migrants but that a substantial minority occupies employer-provided housing dormitories and worksheds.

W.Wu (2004) models the outcome of the binary decision to rent in the public or private market as a function of the same suite of economic, socio-demographic, and institutional variables used in her tenure choice models.[10] She finds that institutional variables (place

[10] Interestingly, in our dataset there are not even enough migrants renting in the public sector to investigate the determinants of renting in the public and private sector among rural-to-urban migrants. Instead, it appears that the more fundamental differences are between housing provided by employers and private rental markets, or between housing provided free and housing for which the occupant pays. This difference could be explained by a number of factors – Wu's (2004) data are from 1999 and 2000 and many of the public sector rentals may have been subsequently privatized; her data are from different cities (Beijing and Shanghai) than ours; and perhaps most importantly, her dataset includes non-migrants

of *hukou*, work unit type) are significant in the rental choice model in ways that serve to limit rural-urban migrants largely to non-public units. Huang (2003) analyzed renters' behavior and pointed out that because of the legacy of Hukou system, migrant renters did not have access to urban subsidized rental housing were therefore disadvantaged relative to urban citizens. Wu's (2006) study finds that institutional, migration, and socio-economic factors all influence migrant intra-urban mobility patterns but that migrants able to obtain public sector rentals are less mobile than others.

Summary

For the most part, the literature on housing in urban China finds that institutional factors are important and strongly influence the functioning of the market in ways that lead to housing inequality. As Huang and Jiang (2007: 5) put it "*the hukou system has generated significant housing inequality between people with different hukou statuses, and local urban residents are more likely to access housing subsidies and live in and own larger and better housing than temporary migrants and suburban farmers* -- the hukou inequality hypothesis." This literature is explicit about the fact that its key findings are linked to the transitional economic and social context in general and the transitional housing market in particular. What has not been addressed in this literature, however, is the extent to which the findings on which these conclusions are based are themselves a function of the specific segment of the transition process that their empirical data reflect.

In fact, all of the studies discussed above, which is a more or less complete accounting of research in this area published in the international literature since 2000, use data from the years preceding the introduction of the fundamental housing reforms of 1998 or before the full housing market impacts of these reforms had been played out. Given the pace of housing market development in China – it is not uncommon for the housing stock to expand ten percent in a year in many cities – several questions must be raised. First, would repeating these studies today yield the same findings? Second, even if the findings from earlier studies are replicated with current data, what do they say about the impact of institutional factors such as *hukou* status on the housing choices of age-matched cohorts of urban subgroups? Put another way, there is little doubt that, as a whole, native-born urban residents – a group that includes large numbers of individuals that bought housing during privatization – are better housed than rural-to-urban migrants. However, is this also true of comparisons between members of both groups that are too young to have benefited from the privatization process? And, if it is true, how much of the difference is attributable to different preferences that migrants hold and different choices that migrants make precisely because they are migrants, and not because their options are circumscribed by institutional barriers?

The point here is not to argue that migrants' housing circumstances are unworthy of policy attention. Rather, it is to note that the principal policy prescription that emerges from the China housing choice and mobility literature – to eliminate any residual housing market barriers migrants face as a result of their *hukou* status - may not yield the desired result of improving migrant housing quality and options. A more productive approach

may instead be to first identify the needs and goals of migrants themselves, and then determine the extent to which the current suite of housing options meets those needs.

Study Site, Research Design, and Data Collection

Migrant concentrations are greatest in the largest cities and we therefore conducted our research in Tianjin. The study was designed to capture housing-relevant characteristics of migrants themselves and information on the housing stock they occupy. Doing so in a reasonably representative way introduced a number of methodological challenges, our solutions to which are described in this section. The section also describes the field methods used that the team from Nankai University used to collect the data.

Study Site

Tianjin is one of China's four provincial-level municipalities (see Map 1A). The city is a major industrial area, and has the third largest built-up area in China behind only Shanghai and Beijing. Tianjin is also currently the site of an ambitious development project, the Binhai New Area, modeled on the success of Pudong and Shenzhen. Tianjin municipality is divided into eighteen county-level divisions, with six districts (Heping, Hexi, Hedong, Hongqiao, Hebei and Nankai) forming the city proper (See Map 1B). Our survey took place in these six districts only.

Map 1A/1B: Tianjin's Location in China, Tianjin City Proper

Source: Map 1a: *Tianjin: location*. Online Map/Still. Encyclopædia Britannica Online. August 17, 2007. http://www.britannica.com/eb/art-55138. Map 1B: *Tianjin Shi*, China administrative district web, www.xzqh.org

Tianjin's urban population has been growing rapidly due largely to migration. At the end of 2006, the estimated 'long-term' population (*i.e.*, the number of residents that had been in the city as least six months) was 11.0 million, up 320,000 from a year earlier. Of these 11.0 million, 1.4 million were migrants, all but 200,000 of which were 'temporary' - that is, without Tianjin *hukou*. At this level, rural-to-urban migrants make up roughly 10 percent of the city's total population.

Research Design

As suggested at various points above, the project is explicitly designed to respond to the lack of knowledge regarding the determinants of housing conditions and housing behavior of rural migrants. To accomplish this, we used a survey instrument deployed among a sample of low-wage, low-skill migrants. Specifically, our sample includes only those: (1) who do not have Tianjin residence permits (to ensure that they are indeed migrants), (2) who did not come to Tianjin as students, and (3) who do not own homes (to ensure that our results are not biased by the very small minority of rural-to-urban migrants who have become wealthy enough to escape the housing issues experienced by most migrants). The resulting sample includes only low-status migrants of the type that would be expected to suffer the most acute housing problems and thus be the focus of policy development. Among this group, the primary housing options are various forms of employer provided housing and low-cost private rentals.

The data were collected in Tianjin's six core urban districts in January and February of 2007. Interviewers were graduate students from Nankai University's Department of Sociology and Social Policy, under the direction of Prof. Huamin Peng, one of the authors of this study. Each day between 15 and 25 interviewers were assigned to specific sub-areas of the six districts (to avoid repetition, ensure geographic coverage, and avoid drawing a sample from a handful of very large enterprises with large migrant workforces) and to specific types of migrants (based on employment category), whom they identified on, or outside of job sites. The interview itself was conducted (anonymously) by the interviewer from a questionnaire prepared by the research team, which included questions regarding the basic social-demographic conditions of the interviewees, their connection with home villages, their employment situation, housing characteristics, and the interviewees' subjective assessments of their housing conditions. The process yielded a dataset of 796 usable records.

The research design needed to fulfill two analytical requirements: (1) to produce a sufficiently large and varied dataset to support quantitative modeling of the determinants of migrants' housing choice, quality, and satisfaction and (2) to yield complementary information about housing preferences, search and decision making via long form responses. Neither of these requirements could be met using existing datasets.[11] The primary methodological challenge we faced was devising a method to select a reasonably representative sample of migrant housing units. Unsurprisingly, no sample frame of housing units in Tianjin exists, nor is there any frame for migrants themselves. (Rural-to-urban migrants are frequently not recorded by neighborhood residents committees).

[11] The most obvious alternative, the 2000 Census has two key problems. First, the information is dated relative tot eh changes in housing markets and policies that have unfolded in the nearly seven years since it was conducted. Second, using census data it is not possible to single out rural-to-urban migrants from migrants who have always been urban citizens and moved between cities. However, there is no official statistics focusing on rural-to-urban migrants living and working in cities only. Although not short of anecdotal reports in media and government reports, there is no attempt to carry out systematic surveys to understand exactly the situation. Therefore, the overall housing conditions of rural-to-urban migrants in cities remained largely unknown.

This situation mandated a methodological work-around and the one we devised in order to procure as representative a sample as possible of the housing occupied by this mobile population is as follows. First, we used official data from surveys conducted in 2005 among migrants in nine major cities, including Tianjin, to identify the breakdown of migrants by industry sector (*e.g.*, construction or manufacturing).[12] The employment distribution revealed by the survey is shown in Figure 3. We then stratified based on these industry shares and interviewed the requisite number of migrants from each, yielding a sample with the same cross-industry employment distribution as the overall migrant population. This method assumes that by sampling migrants in this way we will capture the range of variation in unit types and housing situations of the overall migrant population.

Table 1: Migrant Employment Distribution by Industry Sector

Category	Share	Category	Share
Manufacturing	27%	Domestic and other services	9%
Construction	26%	Street vending	5%
Wholesale and retail business	12%	Refuse collection	5%
Hotel and restaurant	11%	Other[13]	5%

The sampling strategy is an effective response to a situation that presents substantial methodological challenges for those seeking to use statistical methods. Nonetheless, it is important to acknowledge some potential problems associated with our approach. First, because our interviewers identified many respondents on the street outside their workplaces, or as they moved through the city (in the case of street vendors and refuse collectors), there was little possibility to do follow-up visits to improve the response rate if the initial contact was unsuccessful. Interviewers instead identified and interviewed replacement interviewees from the same sub-district and employment category if the initial interviewee declined to participate. The sample is therefore biased toward those willing to be interviewed. (Interviewees were given a small gift in exchange for participation.)

Unwillingness to participate was least problematic among self-employed individuals and most challenging among workers in more formal employment. Not only could members of this group (*e.g.*, factory workers) not be reached during working hours but in some cases employers tried to forbid interviewees from accepting interviews. It is possible that this is another source of bias as potential interviewees working in the least desirable conditions might be more likely to be excluded from the sample (though it is not clear what impact this might have on characteristics of housing units in the sample). In any

[12] The survey was carried out by the Rural Household Survey Team of the National Statistics Bureau.

[13] The three smallest categories were originally 15 percent for 'informal employment.' We split this into three in order to ensure that we sampled sufficient numbers of street vendors and refuse collectors to support any later weighting that we might need to do because these two categories are important sources of employment for migrants.

case, we attempted to minimize this problem by having interviewers wait outside factories at the end of each working day and conducting interviews after work outside the workplace itself.

Descriptive statistics

The dataset consists of 796 records. The closed form responses used in the models contain four sets of migrant characteristics and four sets of information regarding their housing. Migrant characteristics include: socio-demographic information on the interviewee; individual/household income data; employment information on the interviewee (and spouse if living in Tianjin); information on the interviewee's migration characteristics. Housing characteristics include: housing cost (free or rented); housing source (employer, private market, friends/relatives, government); quality; and satisfaction. These data are reported in Tables 2 and 3, and discussed below.

Socio-demographic characteristics

The dataset is more than half (60.2 percent) male and relatively young. Median age of respondents is 32, with nearly two-thirds under age 30 and 15.7 percent under 20. Unsurprisingly, the education level is low. Overall, 27.1 percent had no more than a primary school education (6 years or less of schooling) and 82.7 percent had no more than a secondary school education (9 years or less of schooling). Virtually all of the rest had either vocational or high school training - with just 1.4 percent of the sample receiving additional schooling after high school.

Two-thirds of respondents are married and about two-thirds of these (62.3 percent) live together with their spouse in Tianjin. Most of the rest (30.9 percent) are single, though a handful cohabitate outside of marriage, are divorced, or widowed. Despite the fact that most respondents are married, more than half (53.1 percent) do not live with family members. Of the total sample, 9.3 percent live in two person households, and 17.9 percent live in three-person households. A majority of households (60.1 percent) contains only one worker, 30.9 percent have two workers and 9.0 percent have three or more workers. More than two-thirds of migrants in the sample have children, and 41.5 percent have two or more children. Most (62.1 percent), however, do not have children living with them in Tianjin. Nearly a third of all respondents (32.3 percent), however, have at least one child with them and in school in Tianjin.

Income

For income, we capture individual and household monthly totals. For interviewees themselves, the monthly average was 1,173 RMB, though this is considerably higher than the median (500 RMB). Total household income is slightly higher, at 1,428 RMB for the mean and 1,000 RMB for the median.

Employment

Table 2 presents data on two key employment characteristics, employer type and industry sector. For the former, we captured seven categories that we collapsed into four. State/collective, (27.0 percent of the sample) combines state and collective sector workers, of which about 90 percent are in the state sector. About 11.5 percent of respondents work for joint ventures and foreign invested enterprises. Private sector firms employ the largest share of respondents (32.4 percent), with self-employment (29.1 percent) also an important category.

As discussed in the section on research design, our sampling procedure stratified interviewees based on eight employment classes. We later combined these eight original sectors into four broad classes to make the quantitative analysis more tractable. The four categories are manufacturing (27.4 percent), construction (27.7 percent), services (31.8 percent), and street business (13.1 percent).[14] These percentages are quite different from those of the respondents' spouses (includes only those spouses in Tianjin), which had much higher shares in services (45.7 percent) and street businesses (27.3 percent).

Migration

The survey collected a richer set of migration characteristics than any previous study of rural migrant housing issues. Most migrants had left their villages relatively recently (median time outside the village is 4.2 years) and in Tianjin for even less time (median time in Tianjin is 3.0 years). Slightly less than one-fifth of respondents plan to stay in Tianjin permanently and 8.4 percent hope to reinforce this commitment by purchasing a home some time in the next five years.

A substantial share (41.8 percent) of the migrants in our sample come from adjacent provinces. Most (70.3 percent) were able to visit their home villages at least once in the preceding year, and 32.5 percent, made two or more visits home. More than three-quarters send monthly remittances home, with the median (mean) amount of these remittances being 333 RMB (429 RMB).

[14] 'Services' combines wholesale/retail, restaurant, and domestic services. 'Street business' combines recycling, street vending, and other. Manufacturing and construction are unadjusted.

Table 2: Respondent Characteristics

	Count	Percent	Cumulative Percent
SOCIO-DEMOGRAPHIC CHARACTERISTICS			
Gender			
Male	479	60.2	60.2
Female	317	39.8	100.0
Age			
<= 20	125	15.7	15.7
20-30	251	31.5	47.2
30-40	296	37.1	84.3
40-50	94	11.8	96.1
50-60	25	3.1	99.2
>60	6	0.8	100.0
Education			
No formal education	41	5.2	5.2
Primary school	174	21.9	27.1
Secondary school	441	55.6	82.7
Vocational schooling	59	7.4	90.2
High school	67	8.5	98.6
Polytechnic school	5	0.6	99.2
Higher education	6	0.8	100.0
Marital status			
Married	532	66.8	66.8
Divorced	10	1.3	68.0
Cohabitate (not married)	4	0.5	68.5
Single	246	30.9	99.4
Widowed	5	0.6	100.0
Live together in Tianjin (married only)			
No	203	37.7	37.7
Yes	336	62.3	100.0
Number of children			
0	261	32.8	32.8
1	205	25.7	58.5
2	263	33.0	91.5
3+	68	8.5	100.0
Children in Tianjin			
0	495	62.1	62.1
1	167	21.0	83.1
2+	135	17.0	100.0
Children studying in Tianjin			
0	540	67.8	67.8
1	188	23.6	91.3
2+	69	8.7	100.0
Household size			
1	423	53.1	53.1
2	74	9.3	62.4
3	143	17.9	80.3
4	112	14.1	94.4
5+	45	5.67	100.0
Workers in household			
1	479	60.1	60.1
2	246	30.9	91.0
3+	72	9.0	100.0

INCOME			
Monthly income (RMB)		**min**	**max**
Interviewee income - median	500	100	8,000
Interviewee income – mean (st. dev.)	1,173 (840)		
Household income - median	1,000	200	20,000
Household income – mean (st. dev.)	1,428 (1,185)		
EMPLOYMENT			
Employer type			
State or collective	211	27.0	27.0
Private sector	254	32.4	59.4
Self-employed	228	29.1	88.5
Foreign-invested/joint venture	90	11.5	100.0
Industry			
Manufacturing	215	27.4	27.4
Construction	218	27.7	55.1
Services	250	31.8	86.9
Street	103	13.1	100.0
Partner's Industry			
Manufacturing	50	14.7	14.7
Construction	42	12.3	27.0
Services	156	45.7	72.7
Street	93	27.3	100.0
MIGRATION			
Years outside village		**min**	**max**
Median	4.2	0.1	35
Mean (st. dev.)	6 (5.3)		
Years in Tianjin			
Median	3.0	0.1	35
Mean (st. dev.)	4.3 (4.4)		
Plan to settle permanently in Tianjin			
No	641	80.8	80.8
Yes	152	19.2	100.0
Plan to buy house in Tianjin in next 5 years			
No	729	91.6	91.6
Yes	67	8.4	100.0
Own land at home			
No land at home	116	14.9	14.9
Yes	665	85.2	100.0
Coming from an adjacent province			
No	464	58.2	58.22
Yes	333	41.8	100.0
Number of visits home last year			
0	235	29.7	29.7
1	299	37.8	67.5
2	122	15.4	82.9
3+	135	17.1	100.0
Send monthly remittance			
No	171	21.7	21.7
Yes	618	78.3	100.0
Amount of monthly remittance (RMB)		**min**	**max**
Median	333	25	8,333
Mean (st. dev.)	429 (663)		

Housing provider/cost

The two primary issues examined in the housing choice models later are the cost and provider of migrants' housing (Table 3). In our sample, just over half (51.0 percent) of respondents get their housing through their employer. The private market supplies 43.0 percent and the remaining 6.0 percent receive housing from a combination of friends, relatives, and government, or built their home themselves. Overall, a slight majority of all respondents (55.4 percent) pays rent and the rest do not. Of those not paying rent, almost 90 percent get housing through their employer. Among those that do pay rent, the monthly median is 200 RMB for those that do not live in a household with other family members and 300 RMB for those who do.

Housing quality

A minority of migrants suffer from each of the three indoor environmental problems we measured. The most common problem was dampness (35.1 percent), followed by cold in winter (17.9 percent), and noise (8.7 percent). Most respondents have heat (88.2 percent) and interior tap water (69.4 percent). Less than half live in housing with toilets (47.4 percent), kitchens (32.8 percent), or showers (21.3 percent). Median living space per capita is 4.0 square meters. Most respondents (70.1 percent) live in a permanent structure, but 41.4 percent live at the job site. Slightly more than 10 percent live in a building that is also a place of business. Of those not living at the workplace, most either walk (23.8 percent) or bicycle (29.9 percent) to work. And, almost four-fifths live in Tianjin's core urban area and almost all of the rest live in the inner suburbs.

Housing satisfaction

We measured housing on a five-response scale from very satisfied to very unsatisfied. Few respondents were either unsatisfied (9.4 percent) or very unsatisfied (4.4 percent). Most hold neutral (37.3 percent) or weakly positive (34.2 percent) feelings about the housing they occupy. All told, only 13.8 percent are dissatisfied with their housing.

Table 3: Housing Characteristics

	Count	Percent	Cumulative Percent
HOUSING SOURCE/COST			
Provider			
Employer	406	51.0	51.0
Private landlord	342	43.0	94.0
Other	48	6.0	100.0
Friends/relatives	*27*		
Government	*14*		
Self-built	*7*		
Rent			
Pay rent	441	55.4	55.4
Live in shop (without paying extra for rent)	11	1.4	56.8
Free	344	43.2	100.0
Employer	*318*		
Friends/relatives	*15*		
Government	*5*		
Self-built	*7*		
Monthly rent paid			
Single people		**min**	**max**
Median	200	40	10,000
Mean (st. dev.)	340 (909)		
Families			
Median	300	20	12,500
Mean (st. dev.)	461 (891)		
QUALITY			
Environmental conditions (#/% saying 'yes')			
Cold in winter	143	17.9	
Damp	280	35.1	
Very noisy/noise disturbs sleep	69	8.7	
Amenities (#/% with access)			
Interior toilet	378	47.4	
Interior tap water	553	69.4	
Heated	703	88.2	
Kitchen (private or shared)	161	32.8	
Shower	169	21.3	
Other			
Live in permanent structure	553	70.1	
Residence building also used for business	83	10.5	
Live at job site	330	41.4	
Commuting method			
Walk	190	23.8	
Bicycle	238	29.9	
Public transport	13	1.6	
Picked up by employer	22	2.8	
Location			
Inner city	621	77.9	77.9
Inner suburb	158	19.8	97.7
Outskirts	18	2.3	100.0

	Count	Percent	Cumulative Percent
SATISFACTION			
Satisfaction level			
Very satisfied	117	14.7	14.7
Satisfied	272	34.2	48.9
No strong opinion either way	297	37.3	86.2
Dissatisfied	75	9.4	95.6
Very dissatisfied	35	4.4	100.0

Summary

The descriptive information presented here shows that our sample of non-homeowning rural migrants, without urban *hukou* are for the most part young people with modest incomes and education. Many have families, and surprising share are together in Tianjin. Respondents work in a variety of low-wage, low-skill jobs distributed across the state and private sectors, though many are self-employed. Most of these migrants have left their villages fairly recently and a majority intend to return home. Most send money home monthly and make at least one visit home annually.

The housing migrants occupy is very likely to be provided by their employer, often, though not always, for free. Most migrants that do not receive housing from their employers find it the private market at modest prices, though a handful get housing from other sources such as relatives or the government. The housing that migrants occupy is likely to suffer one or more quality problems and be relatively small and crowded. In many cases, they are located at the job site itself and, if not, they are typically within walking or biking distance. Ultimately, despite the problems they experience, most migrants are not inordinately dissatisfied with their housing.

Empirical Analysis: Housing Choice, Demand, Quality, and Satisfaction

This section begins by presenting models that explore the determinants of two fundamental aspects of migrants housing choices: (1) whether migrants obtain housing in the market or from their employer ('provider model') and (2) whether they pay rent for housing or get it for free ('cost model'). Because the results of these two equations indicate that a substantial portion of housing outcomes are not determined by market processes, we follow this with a simple housing demand equation for the subset of respondents that finds housing in the market (*i.e.*, those that pay rent to a private landlord). This analysis shows that the determinants of housing demand are more consistent with market processes among this subgroup than in the overall migrant sample, and also indicates that different migration characteristics influence monthly rent paid than in the two choice models. The final subsection models the determinants of housing quality, showing that migration characteristics and interactions between industry sector and housing cost are key factors. The data did not support the housing satisfaction analysis we intended to conduct, so the issue is addressed descriptively.

Housing provider model

The provider model is run over a dichotomous variable indicating whether respondents find housing in the market or through their employer (note that not all employer provided housing is free). As discussed above, almost all migrants in the sample get their housing from one of these two sources (employer: 51.0 percent, private market: 43.0 percent). The remaining 6 percent are a combination of housing sourced from friends, relatives, and government, or self-built structures. We dropped these respondents from the choice models rather than running multinomial logits for two reasons. For 'government' (14 respondents) and 'self-built' (7 respondents) the sample sizes are quite small. 'Living with friends or relatives' relies on the somewhat idiosyncratic circumstance of having these options available, and is clearly not the source of a broad, policy-amenable solution to the problems migrants face in the housing market.

The provider model is a binomial logit of the factors that determine whether a migrant finds housing in the market (45.7 percent) or receives it from his/her employer (54.3 percent). The independent variables are grouped into the four categories from the preceding section: socio-demographic, income, employment, and migration. The first two groups are standard controls from the literature on housing choice and the latter two reflect the current context in urban China. Our hypotheses regarding the four groups is that although life-cycle and economic factors will be important, (1) there will also be evidence that migration characteristics influence housing choices and (2) employment factors will figure strongly in determining migrants' housing provider.

The left panel of Table 4 presents coefficients and odds ratios for the four sets of variables in the model. Among the socio-demographic set, only factors related to age and family structure are significant. Each additional year raises the odds of finding housing in the market 50 percent, though this effect diminishes with age, as shown by the negative coefficient on age squared. Living together with one's spouse boosts the odds of finding housing through the market nearly 300 percent (odd ratio = 2.86) and having school-aged children in Tianjin raises the odds a further 421 percent. Neither income nor education play any role in the housing provider model.

As expected, employment variables are significant and, in many cases strong determinants of housing provider for migrants. For industry type the omitted category is construction (85.4 percent of our respondents in the construction industry live in employer provided housing). Relative to working in construction, working in the manufacturing, service, and street industries increases migrants' odds of occupying private sector rentals substantially (630, 1127, and 440 percent, respectively). For employer type, the omitted category is the state sector.[15] Relative to migrants working for state employers, the odds of finding housing in the market for those working in the private sector are 211 percent higher and they are (obviously) dramatically higher for the

[15] In many other studies the 'state sector' is a combination of SOE, COE, party, and government employment. In this case, however, it is only SOE and COE jobs (89.1 percent of migrants in this category work for SOEs), as rural migrants do not serve in party or government positions in urban areas.

self-employed as well. Working for a foreign-invested enterprise or joint venture firm does not significantly change the odds of finding housing in the market in comparison to working in the construction field, which is surprising given the very high share of employer housing provision in the construction field.

Three migration variables are included in the model. Interestingly, whereas each year as a migrant (*i.e.*, years since leaving the village) has a negative impact on the odds of finding housing in the market, each year in Tianjin has a stronger, positive impact. Specifically, the odds of finding housing in the market rather than through one's employer decline 8 percent with each year outside the village but increase 18 percent with each year in Tianjin. Planning to settle in Tianjin has no impact on housing provider.

As noted throughout this paper, there is little in the literature to guide us to specific hypotheses about the signs and magnitude of the impacts of the indicators in our migrant housing choice models. The findings here are, therefore, necessarily somewhat descriptive, but we were able to develop some general expectations about the model outcomes from previous work. In this sense, the absence of any impact for income and education, which through their joint influence on current and permanent income should affect housing choices, is notable. This non-finding suggests that living in employer housing (78.8 percent of which is provided for free) is more a characteristic of the job - some jobs simply come with a housing situation 'attached' – than it is a housing 'choice.' This is also likely the case even where migrants pay rent to their employer. It is clear from the model that certain types of jobs, such as construction jobs for SOE employers, are much more likely than others to have housing 'attached' to them than others. In fact, the two employment variables – type of employer and industry class - have very strong effects on migrant's housing outcomes in the model. The effects of migration variables are weaker than those for employment but they do nonetheless influence housing outcomes within our pool of low-status migrants. This suggests a diversity of preferences, resources, and constraints with respect to housing within the migrant pool. The fact that more time in the city raises the odds of finding housing through the market may indicate that individuals become more integrated into urban life over time.

Housing cost model

The cost model is another way of looking at the housing 'choices' of rural migrants in urban areas. Respondents are again divided into two categories – those who pay for their housing (56.2 percent) and those who do not (43.8 percent). Paying rent is coded as '1' and living in free housing is '0.' The model includes the same four sets of independent variables as the provider model. Results are presented in the right panel of Table 4.

Table 4: Housing Choice Logistic Regression Results

	HOUSING PROVIDER (1= market, 0= employer)			PAY RENT (1 = pay rent, 0 = free)		
SOCIO-DEMOGRAPHIC	coefficient		odds ratio	coefficient		odds ratio
Gender (male = 1)	0.48		1.62	0.31		1.36
Age	0.41	***	1.50	0.11		1.12
Age squared	-0.01	***	0.99	-0.00	*	1.00
Education (ref: no schooling)						
Primary school	0.09		1.09	-0.14		0.87
Secondary school	0.19		1.21	0.41		1.51
Vocational school	0.19		1.21	0.13		1.14
High school or more	0.54		1.71	0.65		1.92
Life with spouse in TJ	1.05	**	2.86	0.78	**	2.19
School age children in TJ	1.44	***	4.21	2.08	***	7.99
Workers in household	0.42		1.52	0.34		1.40
INCOME						
Household income	-0.00		1.00	0.00		1.00
Household income squared	-0.00		1.00	-0.00		1.00
EMPLOYMENT						
Industry Sector (ref: construction)						
Manufacturing	1.84	***	6.30	2.33	***	10.26
Service	2.42	***	11.27	1.61	***	5.00
Street business	1.48	**	4.40	1.44	**	4.26
Employer type (ref: state)						
Private	0.75	**	2.11	0.16		1.17
Self-employed	2.41	***	11.10	1.66	***	5.24
Foreign-invest/joint venture	-0.55		0.58	1.13	***	3.10
MIGRATION						
Years outside the village	-0.08	*	0.92	-0.05		0.95
Years in TJ	0.16	***	1.18	0.09	*	1.10
Plan to stay TJ permanently	-0.16		0.85	-0.99	***	0.37
Constant	-11.10	***		-5.10	***	
Log likelihood	-209.8			-292.4		
LR chi square (deg. of freedom)	537.1 (21)			432.3 (21)		
Pseudo R-squared	0.561			0.425		
N	697			740		

Note: */**/*** denote significance at 0.10/ 0.05/0.01 levels.

As with the provider model, the socio-demographic variables with the strongest effects are those related to household structure. Living with a spouse increases the odds of paying rent by 220 percent. Living with school-aged children is even more potent, raising the odds of renting by a factor of eight. Education, gender, and number of workers in the household are again not significant. In the provider model both age and age squared were significant at the 0.01 level but in the cost model only age squared is significant and somewhat marginally so (p=0.84). Strikingly for a cost model, income is not significant.

Employment variables strongly influence whether a migrant pays rent or not. Relative to working in the construction industry, working in manufacturing raises the odds of paying rent for one's housing more than 1,000 percent. Working in the service or street business sectors boosts the odds between 4 and 5 times. Relative to working in the state sector, being self-employed raises the odds of paying rent more than 500 percent and working for an FIE or JV raises the odds over 300 percent.

Two of the three migration variables have significant effects on the likelihood of a migrant paying rent for housing. Each year in Tianjin raises the odds of paying rent by 10 percent. Planning to stay in Tianjin permanently lowers the odds by about two thirds. Years as a migrant is not significant.

The model's finding that household structure is related to housing costs provides a link to the literature, which shows that, in general, couples have higher demand for housing than singles and that families have higher demand than couples, and that households adjust their housing consumption to reflect these household structure changes. In this case, however, it is not clear which way the causality runs. Although it is possible that migrants respond to life-cycle triggers, such as childbearing, by altering their housing consumption, it is also possible that they adjust family structure (for instance by keeping their family separated with one spouse and/or children in the village) until they are able to afford more urban housing. The non-significance of income and education (indicators of current and permanent income in a housing demand context) in this binomial cost model also suggests that the standard decision-making calculus, by which rising income boosts housing demand, is either not at work or is being swamped by other factors. A full investigation of these issues will probably require in-depth interviewing to sort out.

The fact that years in Tianjin positively influences the likelihood of renting while planning to stay permanently in the city is a negative influence is puzzling. Staying longer probably means having had more chances to craft a relatively suitable lifestyle, which, may mean not living in free housing in a workplace dormitory or job-site type of housing situation. The fact that planning to stay in the city permanently has a negative impact might mean simply that newer migrants that more optimistic about city life and who still occupy the free housing associated with jobs that provide entry into the urban labor market are more likely to say that they will settle in the city for the long term. It is also possible that because the cost of staying in the city is substantial, those that plan to stay attempt to conserve money in every way possible so that they can afford the high cost of housing, school fees and other expenses they will encounter in a lifetime of urban living.

Housing demand

The results in the preceding section suggest that, overall, the low-cost rental sector serving rural migrants is not truly a 'market' because a significant share of housing choices are clearly non-market transactions with housing acquired for free and/or through employers. To examine this issue, we run a housing demand equation for those who obtain housing in the private market. The goal is to assess whether this portion of the

migrant housing sector exhibits the characteristics more typical of a functioning market (*e.g.*, a relationship between income and housing consumption) than we found in the choice models.

Table 5: Regression Results for Market Rents

Dependent variable: ln(monthly rent)			
	coefficient	p value	significance
SOCIO-DEMOGRAPHIC			
Age	0.058	0.100	*
Age squared	-0.001	0.114	
Education (ref: no schooling)			
Primary school	0.093	0.557	
Secondary school	0.038	0.803	
Vocational school	0.162	0.480	
High school or more	0.175	0.327	
Workers in household	-0.030	0.593	
INCOME			
Natural log of household income	0.468	0.000	***
EMPLOYMENT			
Industry Sector (ref: construction)			
Manufacturing	-0.276	0.064	*
Service	0.230	0.055	*
Street business	0.053	0.698	
Employer type (ref: state)			
Private	0.178	0.178	
Self-employed	0.501	0.000	***
Foreign-invest/joint venture	0.254	0.112	
MIGRATION			
Years outside the village	0.004	0.776	
Years in TJ	0.006	0.729	
Plan to stay TJ permanently	0.182	0.039	**
Land at home	0.149	0.098	*
Send monthly remittance	-0.247	0.005	***
Constant	0.717	0.368	
Adjusted R-squared	0.395		
N	297		

Note: */**/*** denote significance at 0.10/ 0.05/0.01 levels.

If the sector is indeed more marketized, this should show up in the equation in several ways. First, income should be significant. Second, education might be significant as well (as a proxy for permanent income, which we do not include). Third, the role of industry class should be weaker (especially because income is controlled, cancelling out cross sector wage differentials). Fourth, employer type should not have any particular effect. Fifth, different migration variables should be important than in the previous models, including remittances (which should reduce the income available for rent), owning land at home (a possible source of non-wage income that should increase housing demand).

Table 5 presents results of the model where housing demand is measured as the natural log of rent paid.[16] In terms of the expectations from the preceding paragraph, it shows the following. Income is indeed significant but education is not. Employment variables do have weaker effects than in the two previous models, though as a class they remain important. Finally, the effects of duration of stay and years as a migrant disappear but three other variables related to migration are significant.

Collectively, the results suggest several issues about the low-cost rental sector of the migrant housing market. First, it is indeed more marketized than the overall migrant housing sector, as evidenced by the role of income, the diminished importance of employment variables, and the model's sensitivity to remittances, which have a negative impact on monthly rent paid. The remaining role for employment variables raises several questions, however. Self-employed workers pay significantly more for housing but it is not clear if this is because they have higher demand for housing (their median monthly incomes are 50 percent higher than those of the other groups) or if they are the only group without access to some form of employer-based subsidy (even for those finding private rentals) that we do not capture in our dataset.

The importance of the migration variables also raises several questions. The negative effect of remittances is easiest to interpret – sending money home reduces the amount available to devote to paying rent. The fact that planning to stay in Tianjin permanently raises rent paid is probably related to income and wealth – only households with sufficient financial means would consider staying long term and such households might also have higher current housing demand. Finally, the fact that having land at home boosts income could result from its role as a source of non-wage income. The land could produce income directly through leasing to others and/or reduce the need to send remittances home if it is being farmed. Overall, it is quite clear that migration-related characteristics play an important role in housing demand in the low-cost private rental sector of Tianjin's housing market.

Housing quality

Much has been made of the low quality of migrant housing. Such concerns are supported by our results. As shown in the upper panel of Table 6, majorities of migrants have no access to showers, kitchen, or indoor plumbing. Many (41.2 percent) also endure damp conditions and about 30 percent have no interior tap water and occupy units in temporary structures. Slightly less than one-fifth are cold in winter and about 10 percent are too noisy to sleep, have no heat, or are in non-residential buildings (Table 6).

[16] Note that several variables have been dropped relative to the logit models in Tables 3 and 4 (gender, family structure). They were dropped to achieve a more parsimonious model and simplify the presentation only after confirming that they were totally unrelated to the log of monthly rent and that their removal did not have any meaningful impacts on the other variables in the model.

Table 6: Housing Quality Indicators and Index Values

Indicator	Responses	Share (%)	Valid Responses	Index Points
No shower access	626	78.7	795	-
No kitchen access	535	67.2	796	-
*** Community public toilet only**	**419**	**52.6**	**796**	**1**
Damp	328	41.2	795	-
Very damp and unhealthy	*48*	*6.0*		-
Somewhat damp but not unbearable	*280*	*35.2*		-
***No tap water access**	**244**	**30.6**	**797**	**1**
***Structure is temporary**	**235**	**29.8**	**789**	**1**
Unit is very cold in winter	143	18.0	794	-
***Unit has no heat**	**94**	**11.8**	**795**	**1**
***Building also used for business purposes**	**83**	**10.5**	**789**	**1**
Unit is very noisy, makes sleeping difficult	69	8.7	795	-

Index Values

	Responses	Share (%)
Severe problems (3-5 problems)	146	18.3
Significant problems (2 problems)	183	23.0
Some problems (1 problem)	229	28.7
No problem (0 problems)	239	30.0
Total	797	100.0

The lower panel of Table 6 shows the quality index we produced from the information in the upper panel. In order to be both valid and useful an index must not only measure important elements of housing quality but also offer sufficient variation as to be meaningful. For example, access to an in-home kitchen might be a useful quality indicator but its distribution in the sample limits its usefulness because 535 of the 795 (67.2 percent) of respondents have no kitchen access. In addition, several of the variables in the table overlap (*e.g.*, not having heat and being cold in winter). Ultimately, we were able to devise a parsimonious index using just five of the ten variables in the upper panel off Table 6. These are in bold text and starred in the Table. Having each of these characteristics was worth a single point, for a maximum index score of five and a minimum of zero. We grouped these into four classes 'severe'/'significant'/'some'/'none' as indicated on the figure. Each accounts for between 18.3 and 30.0 percent of the sample.

The quality index is then used as the dependent variable in an ordered logit model, results of which are presented in Table 7. Groups of variables included are similar to the housing choice models. That is, we hypothesize that housing quality will be related to socio-demographic characteristics, income, employment and migration characteristics of migrants. We also included the dependent variables from the housing choice equations, on the assumption that the cost and provider of the housing ought to influence quality as well. Overall, the models are weaker than the choice models but the number of significant variables is high. Since the index is somewhat arbitrary in the sense the differences

between index values are not reflective of specific differences in housing quality, results are not discussed in terms of the magnitude of their impacts on the proportional odds of various dependent to variable outcomes. Rather, the discussion is in terms of signs and significance.

Quality model 1's (left panel of Table 7) results show that being male, older, and living with one's spouse lower housing quality whereas having additional schooling and school aged children has a positive effect, as does income. Relative to working in the construction sector, service and manufacturing workers are better housed. Similarly, those in the private and self-employed sectors have higher quality housing than SOE/COE workers. Among migration characteristics, each year as a migrant lowers housing quality, as does sending money home. More time in Tianjin, however, raises quality. Finally, paying rent for one's housing raises quality, all else equal, but getting it through the market rather than one's employer appears not to.

In assessing the results is not obvious why simply working in one type of industry ought to raise or lower housing quality when cost, provider, and income are controlled. Why, for example, at the same income level should service sector workers who rent housing in the private market occupy better quality housing than construction workers who rent housing in the private market? This question, and the general importance of employment variables in migrant housing issues examined thus far, led us to introduce interaction terms for industry sector and whether the housing is free or rented. Our hypothesis is that if free housing is of poorer quality than rented housing and the proclivity to offer free housing varies across industries, it will incorrectly appear that industry class is related to quality in analyses like our Quality model 1. If true, the interaction terms should be significant at the expense of the employment sector dummies.

Quality model 2 introduces three variables interacting free housing with each of the three industry sector dummies. All of these variables are significant, minimally at the 0.05 level. The addition of the interaction terms has little impact on the socio-demographic, income, and migration variables. The effect on employment and housing is more pronounced. The rent/free variable increases substantially in significance and size, and provider goes from non-significance ($p=0.175$) to significance ($p=0.083$). The most dramatic effect, however, is on the industry sector variables - none of which is significant in the second quality model. The manufacturing dummy went from a p value of 0.000 to 0.765 and the services dummy went from 0.018 to 0.323. Meanwhile, the rent/free dummy increased in significance. In short, model 2 is clearly better specified, indicating that quality is a function not of employer type but of the type of housing typically offered by employers for free across industries.

Overall, quality models show that the relationship between quality and employment is strong but subtle. They also show that quality varies with migration characteristics in ways that can be intuitive (*e.g.*, lower quality among those that send money home) and that reflect the migrant experience (*e.g.*, need for remittances, owning farmland) but that have not been widely studied as determinants of housing outcomes. The fact that income in particular performs as expected lends credibility to the overall model.

Table 7: Housing Quality Ordered Logit Results

Dependent variable: quality index (ascending)	QUALITY 1		QUALITY 2 (employment/cost interactions)	
SOCIO-DEMOGRAPHIC	coefficient		coefficient	
Gender (male=1)	-0.414	**	-0.253	
Age	-0.033	***	-0.026	**
Education (ref: no schooling)				
Primary school	0.923	**	0.968	**
Secondary school	1.226	***	1.400	***
Vocational school	2.029	***	1.972	***
High school or more	1.089	**	1.186	**
Life with spouse in TJ	-0.850	***	-0.872	***
School age children in TJ	0.718	***	0.643	**
Workers in household	0.187		0.226	
INCOME				
Household income (thousands)	0.184	**	0.196	**
EMPLOYMENT				
Industry Sector (ref: constr.)				
Manufacturing	1.207	***	-0.115	
Service	0.606	**	-0.309	
Street business	0.404		-0.417	
Employer type (ref: state)				
Private	1.068	***	0.760	***
Self-employed	0.954	***	0.657	**
Foreign-invest/joint venture	0.406		0.562	*
MIGRATION				
Years outside the village	-0.060	**	-0.055	**
Years in TJ	0.061	**	0.042	
Plan to stay TJ permanently	-0.014		-0.051	
Land at home	-0.365		-0.410	*
Send monthly remittance	-0.452	**	-0.402	**
HOUSING CHOICE				
Pay rent (1 = pay rent)	0.565	*	2.33	***
Market provided (1 = market)	-0.446		-0.591	*
INTERACTIONS				
Manufacturing*free			2.481	***
Services*free			2.041	***
Street business*free			1.519	**
Log likelihood	-779.8		-762.0	
LR chi square (deg. Of freedom)	293.6 (23)		326.7 (26)	
Pseudo R-squared	0.158		0.177	
N	682		681	

Note: */**/*** denote significance at 0.10/ 0.05/0.01 levels.

Housing satisfaction

In policy debates about migrant housing, there is an assumption that quality and satisfaction are closely linked. Since migrant housing quality tends to be low it is thus believed that satisfaction is also low and therefore not well suited to the needs of migrants. Although such claims are not unreasonable, they are typically made without empirical support.

Table 8 shows that despite the quality issues discussed above, relatively few migrants are dissatisfied (9.4 percent) or very dissatisfied with their housing (4.4). Much larger shares are satisfied (34.2 percent) or very satisfied (14.7 percent) and an additional 37.3 percent do not feel strongly either way. Table 8 does indicate, however, a positive relationship between satisfaction and quality. Dissatisfaction is greatest among occupants of units with severe problems and, occupants of the highest quality units are the most likely to be satisfied with their housing.

Table 8: Satisfaction and Quality

Indicator	Severe Problems (%)	Significant Problems (%)	Some Problems (%)	No Problems (%)	Total (%)	*Total (#)*
Very dissatisfied	9.6	7.1	2.6	0.8	4.4	*35*
Dissatisfied	13.7	8.2	10.0	7.1	9.4	*75*
No strong opinion	45.2	37.9	38.4	31.0	37.3	*297*
Satisfied	25.3	32.4	29.7	45.2	34.2	*272*
Very Satisfied	6.2	14.3	19.2	15.9	14.7	*117*
Total	100.0	100.0	100.0	100.0	100.0	*796*
N	146	182	229	239	796	

The information in the Table indicates that migrants are well aware of the quality issues affecting their housing but, given the nature of the quality indicators comprising the index, are overall quite tolerant of low quality. Our intention was to follow this cross tabulation with a housing satisfaction model that included quality and a series of controls in order to better understand how important housing quality is to migrants. Constructing these models both from theory and inductively, however, yielded very weak results - the models themselves had little explanatory power and few variables achieved significance. We therefore do not present results for the satisfaction model.

We can, however, say a bit more about satisfaction by looking at responses to open-ended questions about the source of respondents' dissatisfaction with current housing. The most common reasons cited were crowding, poor facilities, and price – that is, housing quality and housing cost. Crowding seems to be the primary concern since it is the first point raised even by those paying for housing in the market, as well as those getting housing through employers (who might be expected to pack workers into as little space as possible). In short, it seems that being a migrant dictates an employment/savings

orientation that often results in crowded housing conditions whether or not one gets housing through one's employer or finds it in the market.

Taken together, the limited information on housing satisfaction presented here suggests that housing quality is something migrants assess but seem not to prioritize in their housing choices. In this sense, improving migrants' housing satisfaction will require a better understanding of what causes migrants to take jobs with crowded housing situations attached and to accept crowded rentals in the private market. In another context, Diaz and Luengo-Prado (2006) have shown that earnings uncertainty, which characterizes migrant employment in urban China, affects housing choices. Crowding may therefore be seen simply as a manifestation of migrants' savings orientation in a costly and fickle transitional economy.

Conclusion

The analysis in this paper indicates that many migrants obtain the housing they occupy as a result of the employment they choose. More than half of respondents get their housing through their employer and, employment variables are consistently significant in our housing choice, demand, and quality models. Two-thirds of migrants live on the job site or in walking distance to it, and 90 percent live within half an hour of their workplace.

Under these conditions, it is worth asking how migrants view their housing quality, what the housing conditions of migrants reveals about their housing preferences, and how this intersects with urban housing inequality and the need for migrant-oriented housing policies. Because many migrant workers either choose housing to facilitate employment or are passively sorted into housing based on prior employment choices, the answer may be 'not very much.' This is especially true of those who are newer arrivals to the city – they come to find work and will leave if they are not successful, and even many longer-term migrants will leave Tianjin if they become aware of a better opportunity elsewhere. Under these conditions, the prevailing assumption in the housing choice literature that migrants want to stay in the city but are discouraged from doing so in part by lack of access to suitable housing needs more empirical support.

Given the employment orientation of migrant housing consumers it follows that migrant housing will in many cases reflect the goals of the employer that provide it. These include having employees as near as possible to the job site to facilitate long workdays and limited capital investment in the housing itself. This combination is perhaps best captured by the temporary, movable type of housing found on construction jobsites. It goes without saying that such housing will be of modest quality and that employers will pack in as many workers as they can get away with. For the most part, however, employers' goals intersect with those of their workers who are looking to maintain flexibility and save money (as evidenced by the fact that although they object to the crowding they experience in employer provided housing they crowd themselves when obtaining housing in to the private rental market).

Meanwhile, it is also clear that differences in individual migration characteristics will show up in housing choices. For instance, new migrants with less information about urban labor market and less developed social networks may be more likely to end up in entry level employment - hard labor for modest pay with accommodation provided. Similarly, disposable income as influenced by factors particular to migrants such as remittance levels and owning land in the village will further differentiate housing demand and/or choices, undermining the notion of a monolithic pool of labor clinging desperately to a toehold in urban areas. For some this is no doubt the case but there is no evidence that it is the dominant scenario.

All of which raises the issue of what policy ought to be attempting to accomplish with respect to migrant housing in urban areas and how such goals might best be accomplished. Based on this study we offer the following observations. First, housing policy should not obstruct migrants' ability to obtain and change employment. Jobs-linked housing suits many migrants because they do not need to sort out termination of an existing lease or acquiring new housing elsewhere if a better employment opportunity arises. In this sense, employer provided housing in the low-wage sector of the urban economy may encourage both intra- and inter-urban labor mobility. This means that any housing subsidy carrying a long-term rental contract is likely to fail. In addition, migrant housing must be convenient to work both to maximize income through long working hours and avoid transportation expenses (these criteria may account for the failure government built housing, which is often at the outskirts of urban areas).

Second, any effort to improve migrant housing quality, which, all else equal, migrants would clearly prefer, might best begin through regulation of the employer provided housing pool. Minimally, this would have the advantage of affecting a majority of housing units occupied by migrants. Finally, to help those migrants that want to stay in urban areas long term, it is critical to lower the ancillary costs of urban living, such as school fees and medial insurance that will provide migrants with more disposable income to devote to currently unmet household housing demand. Since many of those planning to stay in urban areas permanently are families, government may also want to offer subsidies to private developers to build or rehabilitate existing structures in locations and configurations that meet migrants' housing needs. It is not clear whether such a plan could work but it may be worth trying on an experimental basis.

Future research should first determine the extent to which conditions in Tianjin are representative of migrants' experience elsewhere. Given the size of Tianjin's migrant population, this seems unlikely but it is clearly possible that these results are idiosyncratic in important ways. Following that, research should compare the determinants of migrant housing choice and demand to those of other low-income urban groups to determine where key differences lie. Finally, future studies should do more to understand the timing of migrants' housing and employment decisions and the relationship between the two. It should be possible to model housing and employment choices in a nested logit structure or something similar that accounts for both the chronology of the choices and the fact that the type of housing occupied is not always 'chosen' as such.

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